Space Weather Forecast

Issued on Thursday, 11 July 2024 at 01:25 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate class flares (R1-R2; Minor-Moderate radio blackouts) likely throughout. Chance of G1/Minor Storm intervals days 2 and 3 (12-13 Jul).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was Moderate after five recent Moderate class flares, peaking at 10/0559 UTC. There are nine regions visible on the disc, though only one of note, this is a large and complex spot which resides near south centre disk. The remaining spots are all small and stable or showing a declining trend.

No significant Earth-directed coronal mass ejections have been observed during the past 24 hours, though several dimming events occurred near the aforementioned spot associated with low level moderate class flares, but no discernible coronal mass ejections were observed.

Solar Wind / Geomagnetic Activity: Solar winds were indicative of background conditions, perhaps with weak negative coronal hole influences. Speeds were slow-ambient to slightly elevated. The Interplanetary Magnetic Field was weak, and the north-south component varied weakly. The resulting geomagnetic activity was Quiet (Kp 1-2).

Energetic Particles / Solar Radiation: Solar radiation was measured at background levels.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be at Low to Moderate levels, with a slight chance of becoming High from any isolated strong flares, which are most likely to originate from the large, centre-disc sunspot region.

Solar Wind / Geomagnetic Activity: No significant Earth-directed coronal mass ejections feature in the forecast. The solar wind should start at background, but rise to slightly elevated on day 1 (11 Jul), due to weak negative polarity coronal hole high speeds streams. During day 2 or 3 (12-13 Jul) a further, likely faster and perhaps more impactful coronal hole high speed stream is expected to arrive bringing elevated solar wind speeds. Waning coronal hole effects are anticipated on day 4 (14 Jul), with speeds falling back to slightly elevated or slow-ambient.

Geomagnetic activity is expected to be mainly Quiet to Unsettled (Kp 1-3) initially with a chance of Active intervals upon the connection to the weak southern coronal hole high speed streams. There is then a Chance of G1/Minor storm intervals (Kp 5) on days 2 and 3 (12-13 Jul), due to the anticipated connection to the stronger northern coronal hole high speed stream. By day 4 (14 Jul), geomagnetic activity should fall back to Quiet to Active (Kp 1-4).

Energetic Particles / Solar Radiation: Solar radiation storms are not expected, but there is a very slight chance of reaching S1/Minor Radiation Storm levels. This risk increases a little later in the period as a sunspot, currently near centre disk, rotates towards the southwest and into a more geoeffective position.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	40	30	20
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	60	60	60	60
Very Active	R3 to R5 X	No	15	15	15	15

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	15	20
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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